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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,741	03/16/2001	Robert Arthur Williams	121723-1022	6874

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Theodore F. Shiells
GARDERE WYNNE SEWELL LLP
Suite 3000
1601 Elm Street
Dallas, TX 75201

EXAMINER

GARCIA OTERO, EDUARDO

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/810,741	WILLIAMS, ROBERT ARTHUR	
	Examiner	Art Unit	
	Eduardo Garcia-Otero	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/8/2001</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION: Non-Final (first action on the merits)

Introduction

1. Title is: METHOD OF PILOT TRAINING USING SIMULATED ENGINE FAILURE.
2. First named inventor is: WILLIAMS.
3. Claims 1-27 have been submitted, examined, and rejected.
4. US application was filed 3/16/2001, and no earlier priority is claimed.

Index of Prior Art

5. Evans refers to US patent 5,873,546.
6. Lea refers to US Patent 4,831,567.
7. Schmidt refers to US Patent 4,673,356

Definitions

8. "OEI" is defined as "one engine inoperative" condition at Evans column 1 line 23.

35 USC § 101-statutory subject matter

9. 35 U.S.C. 101 reads as follows: Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.
10. **Claims 12-21 are rejected under 35 USC 101** because the claimed invention is directed to non-statutory subject matter. Specifically, the claims 12-21 are directed to a "computer program" which is not embodied in a computer-readable media. See MPEP 2106(IV)(B)(1):

Functional Descriptive Material: "Data Structures" Representing Descriptive Material Per Se or Computer Programs Representing Computer Listings Per Se
Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory.
Similarly, computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-

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readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. Accordingly, it is important to distinguish claims that define descriptive material per se from claims that define statutory inventions.

Computer programs are often recited as part of a claim. Office personnel should determine whether the computer program is being claimed as part of an otherwise statutory manufacture or machine. In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim. The same result occurs when a computer program is used in a computerized process where the computer executes the instructions set forth in the computer program. Only when the claimed invention taken as a whole is directed to a mere program listing, i.e., to only its description or expression, is it descriptive material per se and hence nonstatutory.

Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and Office personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material.

When a computer program is claimed in a process where the computer is executing the computer program's instructions, Office personnel should treat the claim as a process claim. See paragraph IV.B.2(b), below. When a computer program is recited in conjunction with a physical structure, such as a computer memory, Office personnel should treat the claim as a product claim. See paragraph IV.B.2(a), below.

Claim Rejections - 35 USC § 102(b)

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action: A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
12. Claims 1, and 3-12, and 14-27 are rejected under 35 U.S.C. 102(b) as being anticipated.
13. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Evans.
14. Claim 1 is an independent claim with 2 limitations, numbered by the Examiner for clarity.
15. In claim 1 limitation [1], **“reducing the power output of a first engine to simulate the engine failure”** is disclosed by Evans column 2 line 51 “throttle one engine to an idle (to simulate an OEI condition)”.
16. In claim 1 limitation [2], **“increasing the power output of at least a second engine to compensate for the reduction of the power output of the first engine”** is disclosed by Evans column 1 line 55 “Aviation regulatory authorities... overdesign of the engines... a single operative engine is capable of Providing a 30-second OEI power rating, a 2-minute OEI power rating, and a maximum continuous OEI power

rating that ensure safe helicopter flight operations during OEI flight operations” and column 2 line 36 “proficiency is typically achieved by repetitive training that is conducted under actual flight conditions”.

17. In claim 3, **“the aircraft is a helicopter”** is disclosed by Evans column 1 line 14 “Many of the helicopters being operated today embody a dual-engine powerplant system”.
18. In claim 4, **“checking one or more aircraft safety systems before starting the simulation”** is disclosed by Evans column 1 line 55 “Aviation regulatory authorities”. Said aviation regulations include standard safety preflight checklists.
19. In claim 5 limitation [1], **“limiting the total power output of the aircraft to the maximum power output of the engines which are not simulating the engine failure”** is disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”.
20. In claim 5 limitation [2], **“limiting the power output level of each engine which is not simulating the engine failure to a level at or below the level at which engine damage will occur”** is disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”.
21. In claim 5 limitation [3], **“limiting the total power output of the engines which are simulating the engine failure to a level at or below the total power output of the aircraft minus the total power output of the engines which are not simulating the engine failure”** is disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”.
22. In claim 6, **“monitoring one or more aircraft systems and returning the aircraft to normal operation whenever a fault is detected in any monitored system”** is disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”, and column 20 line 30 “The training function module 50 is further operative to govern the simulated-failed engine 12L/12R at the minimum power turbine speed N2 for the minimum power-on transient N.sub.R established for the powerplant system 10. For the described embodiment of the S-76C+ helicopter, the simulated-failed engine 12L/12R is

maintained at 91% N2. The simulated-failed engine 12L/12R can be accelerated to full power within two seconds from this governed condition in the event of an OEI condition or if selected by the instructor pilot. The simulated-failed engine 12L/12R will be maintained at 91% N2 during the OEI flight procedures training protocol, but has the capability, under the control of the training function module 50, to provide full power in the event of an abusive maneuver during OEI flight procedures training where excessive rotor droop, i.e., a precipitous fall off in main rotor speed N.sub.R, is encountered.”

23. In claim 7 limitation [1], **“reducing the power output of a first engine to simulate the engine failure”** is disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”.
24. In claim 7 limitation [2], **“increasing the power output: of at least a second engine to a power level sufficient to permit aircraft flight without significant damage to any engine”** is disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”.
25. In claim 7 limitation [3], **“displaying fictional engine condition data indicating that the power output of the first engine is substantially zero and that the power output of the second engine is higher than the true power output”** is disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”.
26. In claim 8, **“the fictional engine condition data is displayed on a flat panel display”** is disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”.
27. In claim 9, **“accurate engine condition data is provided to the pilot in combination with the fictional engine condition data”** is disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”.
28. In claim 10, **“the pilot is alerted any time the fictional power output of any engine exceeds the maximum power output attainable without engine damage”** is

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disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”.

29. In claim 11, **“the fictional engine condition data is provided to the pilot in the form of needle type gauges in combination with digital readouts”** is disclosed by Evans column 3 line 62 “realistically simulate... provide display indications... reduced power outputs that are less”.
30. Claims 12 and 14-21 are “computer program” type claims, and are rejected for the same reasons as “method” type claims 1 and 3-11 above. Note that claims 12-21 are also rejected as non-statutory subject matter, see above.
31. Claims 22-27 are “aircraft” type claims, and are rejected for the same reasons as “method” type claims 1 and 3-11 above.

Claim Rejections - 35 USC § 103

32. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action: (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
33. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: Determining the scope and contents of the prior art. Ascertaining the differences between the prior art and the claims at issue. Resolving the level of ordinary skill in the pertinent art. Considering objective evidence present in the application indicating obviousness or nonobviousness.
34. Claims 2 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans in view of *In re Harza* (legal precedent for duplication, see MPEP 2144.04(VI)(B)).
35. In claim 2, and claim 13, **“the aircraft has more than two engines”** is not disclosed by Evans, but is disclosed by *In re Harza* (legal precedent for duplication), 274 F.2d 669, 124 USPQ 378, 380 (CCPA 1960) which states “It is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced”. See MPEP 2144.04(VI)(B). In this claim, duplicating the part (adding

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a third engine) does not produce any new result and does not produce any unexpected result. In a 3 engine craft, if one engine fails (OEI) then the remaining 2 engines would increase power.

36. MOTIVATION. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use *In re Harza* (legal precedent for duplication, see MPEP 2144.04(VI)(B)) to modify Evans. One of ordinary skill in the art would have been motivated to do this in order to apply the 2 engine simulation training OEI procedures to larger aircraft with 3 or more engines. Note that engine failures become more probable as the craft becomes larger and has more engines.

Additional Cited Prior Art

37. The following US patents or publications are hereby cited as prior art, but have not been used for rejection. Applicant should review these carefully before responding to this office action.
38. Lea US Patent 4,831,567 discloses "multiple engine aircraft simulates the failure of one engine and the simultaneous operation of at least one other engine in an elevated emergency power condition" at Abstract.
39. Schmidt US Patent 4,673,356 discloses "a false instrument display surface which has a false instrument reading... method of simulating in-flight situations during flight in a airplane" at Abstract.

Conclusion

40. All claims stand rejected against prior art. Also, claims 12-21 are further rejected as non-statutory subject matter.

Communication

41. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Garcia-Otero whose telephone number is 703-305-0857. The examiner can normally be reached on Tuesday through Friday from 9:00 AM to 8:00 PM. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone number for this group is 703-872-9306. Any inquiry of a

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general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.

* * * *

JEAN R. HOMERE
PRIMARY EXAMINER

